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I have corresponded with all the leading Ornithologists of the State, and have seen nearly all the Horned Larks which they have in their collections. My thanks are due to the parties named in this article for loaning or allowing me to view the specimens here recorded. All previous records relating to the occurrence of these birds in Maine are open to grave doubts, owing to the uncertainty as to which of the Horned Larks they refer.

Since writing the above article, I have learned that Mr. C. D. Farrar took a specimen of *praticola* from a flock of eight or ten, near Lewiston, Feb. 26, 1897, and that it was identified by Mr. Brewster. For records of these birds, published elsewhere since my article was written, cf. Knight, 'List of the Birds of Maine,' p. 82, and Morrell, 'The Osprey,' June, 1897, p. 137.

NOTES ON THE AMERICAN BARN OWL IN EASTERN PENNSYLVANIA.¹

BY J. HARRIS REED.

THE breeding range of the Barn Owl (*Strix pratincola*), with few exceptions, does not extend north of Pennsylvania or New Jersey. It is locally distributed throughout its range, being restricted to such localities as afford an ample food supply for its wants. The extensive meadow lands along the Delaware River, south of Philadelphia, are its most favorite retreat, in this vicinity. Most of the trees which were scattered over these meadows and stood as old land-marks for roosting and nesting places of this bird for many years have been destroyed by storm or axe, and the Owls have been compelled to a great extent to seek quarters over the adjoining country; a few, however, still remain.

¹ Read before the Delaware Valley Ornithological Club, Philadelphia, April 15, 1897.

During the summer months I have often found the young, after leaving the nest, roosting during the daytime among the dead or dense foliage of trees, probably for want of other shelter. In such cases the ground, bushes, and trunks of the trees in which they roost, are often very noticeably marked with the excrement and dried-out pellets, which lead to their discovery.

This Owl is resident the year around in this locality. During the fall and winter months I have found them roosting both singly and in colonies, depending on the size of their roosting places, and often occupying separate cavities of the same tree. An example of this may be found located in the woods at Glenolden, Delaware County, Pa., which has been a favorite roosting and nesting place for several years. This dormitory is beyond the reach of the ordinary climber, owing to its height of about sixty feet above the ground, the size and bareness of the trunk preventing many persons from investigating them and accomplishing their extermination.

On January 31, 1891, accompanied by my friend Mr. C. A. Voelker, I visited this tree and from the numerous holes in its branches counted fourteen Owls fly out during the evening. Five of these were secured, two males and three females, three being old birds and two young. Again on September 25, 1892, I paid the place a visit, but, arriving a little late in the evening, I saw only four Owls, Mr. Voelker on the following evening seeing five birds, one of which he shot. The Owls leave the roost very early in the evening, often a long time before sunset, departing singly, several minutes elapsing after the exit of one before the appearance of another, each circling around the tree several times before leaving, emitting a note similar to the clucking of a squirrel, probably a call note to their companions. This habit of leaving the roost before sunset, is more noticeable during the breeding season when the days are long and the nestlings require food, and this no doubt accounts for their being seen occasionally during cloudy days searching for food.

I think the female remains on the eggs and is often fed by the male during the season of incubation, as a certain amount of food is generally found in the nest at this time. I have never found the male covering the eggs, although if the cavity is suffi-

ciently large he is often found by her side. I have often cautiously approached their nests and peered into them before they took flight, which enabled me to distinguish the sexes as they left the nest and were shot by my companion or a gunner who chanced to be patrolling the meadows. If the eggs were heavily incubated the female was very reluctant in leaving them, but the male flushed very easily.

In the wild state their food consists chiefly of meadow mice (*Microtus pennsylvanicus*).¹ From the examination of several hundred pellets gathered from about their roosts, etc., I have never yet found any indications of their having eaten birds. I find that two mice is the average number contained in a pellet; and would suppose the Owls on retiring to their roosts in the morning would have a full stomach, and if two mice is the average number eaten at a meal, which takes at least three hours to digest, they would not consume very many mice with even four meals in a night. The pellets are always regurgitated before additional food is eaten, and those which I have examined from birds in the wild state indicated a complete digestion. I have, however, found as many as six mice in a pellet, but in such cases they were always collected from the nests during the breeding season, and were no doubt discarded by the female; I have found as many as thirteen fresh mice in a nest at one time, and I would suppose she would take advantage of such a supply.

In captivity they will eat anything in the fresh meat line. The following interesting facts I observed of a pet Owl belonging to Mr. Voelker, which was sent to him by a man from Haddonfield, New Jersey. From its plumage and size I should judge it was a two year old male. It was crippled in one of its legs, which had been broken above the knee joint, the bones having knit together with the foot sideways, pointing outward, which deprived it of the proper use of the foot; it therefore took kindly to Mr. Voelker's hospitality, who fed it daily on small birds and mice taken from about his premises. When these were not available, slices from

¹ My friend, Mr. S. N. Rhoads, has identified the following mammals in their pellets: *Microtus pennsylvanicus*, *Microtus pinetorum*, *Peromyscus leucopus*, *Zapus hudsonius*, *Blarina brevicauda* and *Condylura cristata*.

the carcass of a Horned Owl, Curlew, Barn Owl, or any other food from about his workshop, was used.

The manner of preparing the food before swallowing it is also very interesting. The mammal or bird, as the case may be, if alive, is killed by piercing or crushing the base of the skull between the mandibles; when a bird, the longest and stiffest wing and tail feathers are plucked with its beak; if of the size of a Sparrow it is swallowed whole, always head first; if of the size of a Catbird, Thrush, or Robin, it is torn apart before devouring.

As Mr. Voelker took pleasure in assisting his pet to prepare its food in proper doses, it always relied on his judgment as to the size and shape of the morsel. I was amused during one of these operations, when he was feeding him a Catbird, just shot. He gave the helpless Owl a leg, with the thigh and adjoining portions attached, expecting him to swallow it whole; this of course with great exertion he endeavored to do, but the thigh end going down his throat, the tarsus stuck crosswise, the foot protruding from the corner of his mouth. When I insisted, Mr. Voelker relieved him by pulling it up again and breaking the bones for him. He never showed any desire to gorge himself, but often refused to notice food after having eaten a small bird. The pellets were always ejected before another meal was eaten, and could be disgorged at will, which was shown when he was offered a tempting piece of food. In doing this he would bow his head against the breast and shake it from side to side in a very dejected manner, then straightening himself up would endeavor to cast it off as if with a very repulsive feeling, as though it had a bitter taste, or was not a pleasant duty. In this manner, with widely distended mouth, it was thrown out with force enough to carry it twelve to eighteen inches from him. These pellets were often only partly digested, which may account for the unusual effort required at times. When remaining in his presence or when disturbed, he kept up a continual cry resembling that of a squab pigeon.

The tameness of this Owl may seem almost incredible; he could always be found in Mr. Voelker's company, either alongside of him or on his arm or shoulder. When engaged at his taxidermic work he would have to place a stuffed companion alongside of

the Owl to attract his attention, or he would be continually in the way. On another occasion during 1893, Mr. Voelker and myself bought three young Owls, which were shipped from Milford, Delaware, to a bird store in Philadelphia to be sold. I think they were two females and one male. The tips of their feathers still had the down clinging to them, especially on their heads and shoulders. This down is pushed out of the papillæ by the new growing feather, and in time becomes brittle and breaks off, not necessarily at the point of attachment, for the fuzzy stumps can often be seen long after the bunches of down have disappeared. The down appears to be in three distinct bunches of seven strands each, about an inch long, attached to the tips of several barbs drawn together, the middle one being exactly in the centre of the feather with one on each side of it. Nature has wisely provided in this way that the nestling should not be unclothed while in the change of moult. The youngest of these Owls was afterwards stuffed with a view of preserving it with the down, which unfortunately became brittle in time and could be blown off like the seeds from a ripe dandelion. The other two birds were liberated and remained in the woods about his house for several months, roosting among the dead foliage of broken limbs, their color resembling the leaves so closely that they were not very readily detected. From this roost I gathered a great many pellets which I examined carefully, but failed to find any differences between them and others collected elsewhere.

I have never witnessed any pugnacious qualities in their habits, but Mr. Voelker informed me that on one occasion the pet Owl attacked his daughter, who opened an umbrella suddenly in his presence; whether or not this was more from fright than anger I am unable to say, but she was always fearful of his presence afterwards. I also read in one of the Philadelphia papers some time ago of a case where a small colony had taken possession of a barn near Plainfield, New Jersey, and fiercely attacked every one who attempted to enter the building, the result of a boy molesting their young. I wrote to the farmer whose name was given, but my letter was returned unopened, and I therefore cannot vouch for the truthfulness of the statement.

During the spring of 1890, while studying the birds of Tinicum,

Delaware County, Pa., I discovered a nesting site of this Owl in a pin-oak tree, about twenty feet above the ground. The tree formed part of and fringed a small clump of maples and other swamp growth, between Long-hook Creek and the railroad, about half a mile above the main woods. The cavity was fifteen inches in diameter and two feet high, extending up to a smaller opening three feet above, which gave the Owls a chance to escape out of either hole if necessary. The entrance to the hole was quite open and the bottom of the cavity only a few inches deep. Among the decayed wood, pellets, droppings, etc., the eggs were laid and often concealed beneath this rubbish, probably to avoid the searching eye of the Crow, Blue Jay, or other intruders, while they were absent from their nest.

On the 31st of March of that year, while wandering along this clump, my attention was directed to this nest by a fence rail standing against the tree. Thinking it the work of some boys, who do not always climb trees for fun, I concluded to satisfy myself. Upon investigation I found it contained three eggs and two young birds a few days old, which, judging from the odor, had been dead some time. I cleaned the nest out and carried the eggs home and on blowing them I found they were in different stages of incubation, one almost fresh while the third was about ready to hatch. I watched this nest regularly and found it reoccupied on the 20th of April. On the 1st of May it contained two eggs; on the 4th, a young bird was hatched; on the 22d, I found the nest robbed again, but, with the birds alive I still kept up hope, and, on the 30th found two eggs. From this time on I began removing the eggs one by one as they were laid, for the nest was continually molested by boys and gunners who shot several male birds from the persistent female, who did not seem to be baffled by her misfortunes. Five of the nine eggs secured were presented to the D. V. O. C. collection of the Academy of Natural Sciences. Everything went well until June 8, when on my way to the tree I met two small boys coming from that direction with her ladyship tied up in a handkerchief and carefully tucked under one fellow's coat. After halting them and seizing their booty, I expressed my displeasure in a very feeling manner. After composing myself, the question then was, what to do with

the Owl. Fearing, if liberated, she might not return to the nest through fright, I concluded to take her home with me and keep her in captivity for a few days, with a view of studying her habits. A large box with a wired front was soon arranged and she was put into it. Here she was kept for three days, but absolutely refused food or water left her, which so preyed upon my feelings that I took compassion on her and set her at liberty. The day following her capture she laid an egg, which was carefully removed with a stick. When I approached her box she would retire to the farthest corner, open her mouth wide and emit a most piercing hissing cry as if from fright, which had a tendency to stand my hair on end. During the next two years after this experience, I occasionally visited the tree with the hopes of finding it occupied, but owing to the building of several houses in the vicinity by a land company, the poor Owls had no peace, and the tree was finally cut down.

From the experience of others with these Owls in captivity, I feel satisfied that the male birds are more easily domesticated than the females.

On two different occasions I took pleasure in escorting some of the Delaware Valley Ornithological Club members to this nest. The first time, being accompanied by Mr. Witmer Stone, the birds were absent, but the finding of three fresh mice in the nest was evidence of its being occupied. Mr. Stone robbed the poor birds of two of these for his collection. On the other occasion Messrs. W. L. Baily and G. S. Morris were escorted to Tinicum on an evening train; Mr. Baily was selected as the victim to climb the tree first to flush the Owls, as both male and female were mostly found together in this nest, the cavity being of sufficient size to accommodate both of them. The flushing of Owls in this manner is a very delicate performance, and on such occasions it is well to wear a mackintosh, as they generally leave the nest in the manner of a Green Heron; but Mr. Baily fared very well, and we clambered up after him and took our positions about the hole for investigation. Among the refuse of the nest an egg was discovered, completely hidden from view; a mouse or two were also probed out. After the Owls left the nest on this, as well as on previous occasions, they were attacked by numerous Crows.

During the summer of 1888, a pair of these Owls frequented the ice-house on the border of the lake at Ridley Park, Pa., and I was informed by a resident of the place that a brood had been reared there the previous year.

I recollect a happy experience with this Owl during April, 1883, when, accompanied by Mr. Voelker, I visited an old pin-oak tree on the lower end of Providence Island, Philadelphia County, where young are probably reared at the present day. The tree in question was within fifty feet of a farm-house, where lived an old Irishman and his family. On one side of the tree was a pig-pen, the shed of which backed up to it. During the afternoon Mr. Voelker had an interview with the mistress of the house, but failed to impress her with the importance of a scientific investigation of the Owl nest, so we concluded to purloin our fuzzy friends after dark. While Mr. Voelker was shinning the tree with my assistance from the shed over the pig-pen, the roof suddenly gave way, and the pair of us landed with a crash among the hogs, who made their escape with a terrible snort; in fact, we made our escape surprisingly quick, also. Afterwards we were always a little gun-shy of the spot, and kept reasonably distant from the locality.

Another old nesting tree, which was blown down by a wind storm August 6, 1893, stood in the southwest corner of Providence Island, between Darby Creek and the railroad. For many years it was regularly occupied, not only as a breeding place, but also for roosting purposes. I visited this tree on September 24, 1893, after hearing of its destruction, and found the decomposed carcasses of three young Owls upon the ground among pellets, etc., which had evidently been the contents of the nest when overtaken by the storm.

The tree, from its fall, had broken in half through the section containing the hole, thereby giving a much better opportunity for investigating.

The height of the hole from the ground was twenty-five feet; diameter of hole inside, two feet; outside diameter of tree at nest, three and one-half feet; the hole, three feet deep, when cleaned out. Upon digging out the solid accumulation of the nest to the extent of two feet deep, several skulls and bones of young Owls

were found, whose death no doubt resulted from starvation caused by the parent birds being shot. I gathered up sixty-eight skulls of mice, which Mr. S. N. Rhoads has identified as already noted. On August 4, 1893, a nest of these Owls was discovered in one of the chutes of the Girard Point Elevators, at the mouth of the Schuylkill River, by one of the employees, who killed the female and presented it to Dr. E. S. Harrington, of Philadelphia, who had it mounted by Mr. Voelker. This nest contained eggs. I was informed by one of the employees that they experienced great difficulty in preventing the Owls from nesting in the lofts of the elevators, and on different occasions nests with young had been found there. There is no doubt that the rats and mice which infest these elevators are their chief attraction, and I see no reason why they would not prove beneficial tenants to the owners. The glass windows in the lanterns were mysteriously broken from time to time, and it was finally attributed to the Owls. This was probably an accident on their part through a desire to reach their quarry from the outside.

Barn Owls also roost and nest among the old hollow-trunked swamp willows growing in the meadows along the Schuylkill River near its mouth.

One of the most peculiar nesting-places which I have met with was in a portable grain elevator, constructed entirely of iron. Within the hood at the top was a wheel six feet in diameter with a convex felloe two feet wide; in the felloe between the spokes they laid their eggs, among the accumulated pellets, etc. They effected an entrance into the hood through a hole above the axle of the wheel. This elevator has been out of service since the new buildings at Girard Point were built, and has been regularly used by the Owls since that time. On April 24, 1895, Mr. Mark L. C. Wilde removed two fresh eggs from this nest, and found it occupied by both birds. On April 30, three additional eggs were secured.

Another nesting place, which is occupied at the present time, is in a pin-oak tree situated in the northwestern corner of Tinicum Island, along Bow Creek. On September 28, 1895, accompanied by Mr. Wilde, I visited this nest. The cavity is twenty feet above the ground and is an irregular oval in shape, its length

being sixteen inches, width twelve inches at one end and six inches at the other. The bottom of the cavity is eight inches below the edge of the hole, and the top of the nest was entirely open, being formed in the stump of a broken-off limb. The birds were not present, but the nest contained seven eggs, four of which were fresh, one slightly incubated and two well advanced. Among the pellets, etc., were probed out thirteen fresh meadow mice.

From my experience, the number of eggs laid ranges from five to seven, and incubation lasts about three weeks for each egg. The earliest date recorded for fresh eggs is March 10, and the latest September 14.

THE TERNS OF MUSKEGET ISLAND, MASSACHUSETTS. PART III.

BY GEORGE H. MACKAY.

I HAD about concluded that I would not take any detailed notes this season on the Terns of Muskeget, intending simply to visit them once or twice during the summer in order to ascertain how they were breeding. In furtherance of this plan I visited the island on June 26 and 27, 1896. *Once there*, I thought I should like to know how they were laying in comparison with other years, especially 1895. I therefore asked Mr. Sandsbury to get his boat ready and we soon started for my favorite Tern resort, Gravelly Island. Our near approach was heralded as usual, and we were greeted with protests by the large assemblage of birds, considerably augmented since last season. Notwithstanding their protests we checked off every nest and egg we could discover. It was evident from the number of birds in the air, as well as the eggs discovered, that the increase from last season had been greater than in any former year. My observations last season have been further strengthened this, that *Sterna dougalli*, where the means are available, builds a better nest and conceals it more carefully than does *S. hirundo*. I saw a good many Roseate nests last year, as